that the skull had been artificially compressed on the left side. He had no doubt that when Mr. Heath studied the voluminous literature relating to Peruvian skulls, he would change his opinion; as it was, the *argumentum ad ignorantiam* was scarcely admissible.

The Rev. J. G. Wood then gave an account of the chief poisons used by savages, commencing with those employed by the Bosjesmans of South Africa. He pointed out, in the first instance, the distinction between them and the bushmen of Australia, with whom they were sometimes confounded. To illustrate his description, specimens of the poisons and a large display of weapons used by savage tribes were exhibited, all of the arrows being poisoned and requiring great care in handling. The first class of poisons described were those made from animal substances. One of those poisons used by the Bosjesmans was formed from the poison-secreting glands of certain serpents, especially of the puff adder, mixed with the inspissated juice of an euphorbia. That poison, however, could not be exhibited in perfection, as the comparatively cold climate of England rendered brittle a composition which required heat to retain it in its proper condition; in consequence of this brittleness nearly all the arrows had lost some of the poison. In applying the poison to arrows a barb made of a triangular slip of quill was generally used, which was separate from the arrow itself, but was inserted into the poison while still soft. When an arrow so constructed entered the flesh the barb became detached and remained in the wound, retaining a sufficient quantity of the poison to produce death. Another kind of animal poison used by the Bosjesman was that of the larva of an insect called kaa, or n'gwa, sounded with a peculiar click with the tongue. It was the grub of a beetle that feeds on a peculiar tree in South Africa; the grub, on falling to the ground, formed a cocoon with the earth on which it fell. The Bosjesmans took the grub, broke it asunder, and with each half spotted the juices on the points of their arrows. The effect of that poison was to madden the wounded animals, and to kill by inducing furious mania. The points of the poisoned arrows were separate from the shafts and were kept inverted in the hollow head of the shaft, which served as a case until they were required for use. One of the arrows poisoned with the n'gwa grub was exhibited. Mr. Wood exhibited specimens of the grub itself, and the earthen cocoons, which were presented to him by Mr. T. Baines. He then proceeded to describe several vegetable poisons used by the natives of Guiana, respecting which he had gained much information from the late Mr. Waterton, who had given him a complete set of the weapons which were exhibited to the meeting. The Macoushi Indians made a very strong poison, the manufacture of which was kept so great a secret that the person who made it entered covertly into the woods with a basket for collecting the materials, and built a hut wherein to concoct the poison unseen, and after it was made the hut was burned down for the better preservation of secresy. Among the materials said to be used in the composition were certain ants, and the fangs of venomous snakes, but Mr. Wood believed that they had no practical effect in the poison, and that in all probability they were merely collected for the sake of deception. The poison was used in

various ways; in one method of using it the points of small arrows were covered with it and propelled through a long blow-pipe, with which the Indians could strike an object at a distance of upwards of one hundred yards, and under circumstances in which a gun would be useless. These small arrows were strung together horizontally, so that they could be conveniently rolled into a bundle and inserted in a quiver adapted to hold them. By this contrivance, which Mr. Wood exhibited, the arrows could be safely deposited and readily taken out when wanted without danger. The effect of the poison was stated to be instantaneous, as it rendered the bird, or animal, struck immediately senseless, and thus prevented their escape. Mr. Wood said he had tried the effect of the poison on a hedgehog: the respiration of the animal immediately became slow, its eyes, which remained wide open, were without sensation and bore the touch of the finger on the eye-ball without shrinking, yet the animal went on breathing for upwards of thirty seconds. Mr. Wood then produced one of the blow-pipes used by the Indians for propelling their arrows, which had been given to him by Mr. Waterton, consisting of a very slight reed (called by the natives ourah) eleven feet long, having a natural polish inside; for the sake of security the reed is inserted into the hollowed stem of a young palm (called by the natives samourah), its total diameter being barely an inch. It had a back sight (made of two incisor teeth of an agouti) as well as a fore sight in the manner adopted in the most approved rifles. With that weapon the Indians could propel their small poisoned arrows with great velocity and accuracy; a piece of cotton wool being twisted round the arrow to make it fit the bore of the blow-pipe. The arrows are sharpened by being drawn between the saw-like teeth of the pirai fish (*Serrasalmus piraya*), just as knives are sharpened by being drawn between two steel plates; half the lower jaw of the pirai is always attached to the quiver, together with a hank of silk-grass thread. The flight of the arrow was so rapid that it could not be seen until it struck the object. Mr. Wood showed the action of the weapon by blowing a small arrow through it at an object in the gallery; the effect was produced by a sharp quick puff of the breath, not by continuous blowing. The poison retained its power for a long time if not allowed to get damp, and the Indians are so well aware of the fact that they construct quivers for holding them which were ingeniously contrived for keeping the arrows dry. One of these quivers was exhibited. For killing large animals bows and larger arrows were employed, the poisoned ends of the arrows being kept separate and fitted on to the shaft just before being used. Rotary motion was communicated to the arrows in their flight by attaching to their lower ends two feathers, one from the right wing the other from the left wing of a bird, which acted obliquely against the air, and thus imparted the rotary motion required. Mr. Wood then briefly described the arrows and blow-pipes used by the savages of tropical America, by the Cingalese, and by the Dyaks of Borneo. He also exhibited two blow pipes, or sumpitans, used by the Dyaks for shooting their arrows, to one of which the head of a spear was fixed, so as to combine the uses of the two weapons, in the manner of a musket and bayonet; this

weapon was presented to him by C. T. C. Grant, Esq., who served for several years in Borneo with Rajah Brooke. The other was remarkable for the manner in which the butt was inlaid with metal. The small arrows used by the Dyaks are poisoned with an extract from the upas tree, the nature of the action of which he said Mr. Grant, who was present would explain. A bamboo flask of the poison was exhibited. Mr. Wood concluded his very interesting account of the poisons used by savage races by exhibiting some skilfully made daggers of the Dyaks, the blades of which were striated for the purpose of retaining poison on the surface.

Mr. Grant, formerly attached to the government of Sarawak (Borneo), said the upas was a magnificent tree; he had seen one at Borneo proper, and under the shade of its branches were many Malay graves, but the old stories about its deadly effects to human beings approaching it, or the birds flying amongst its foliage, were the fabrications of a people given to a highly coloured imagination. The poisonous gum was only fatal when fresh, and if old it could be extracted by sucking the wound immediately after it was inflicted. The principal danger under such circumstances was the barbed fish-bone point of the poisoned "sumpit" (arrow) breaking off and remaining in the wound. When, however, the poison is fresh the effect is rapid, and causes death in little over an hour; the fever and sleepiness resulting from the upas is not unlike, in its effects, the poison of the "cobra capella" snake. Six or seven years ago an attack was made on a tribe of "Kanawit" Dyaks (Borneo), a retaliation for the assassination of two English government officers of Sarawak. The Kanawits (a tatooed tribe) used the sumpitan freely, and from twenty to thirty of the government native force were killed by the arrows, which were freshly poisoned. The lives of a few of those wounded were saved by the gentleman commanding the force giving them strong doses of brandy and ammonia, keeping them in constant active motion, and thus warding off the fatal sleep. This appears to be the only remedy at present known. He (Mr. Grant) spoke from personal experience, as he was well acquainted with the Kanawit and other tribes using the sumpitan, as also with that weapon itself. The two officers killed were personal friends of his own, and he assisted in equipping and despatching the expedition alluded to, which was commanded by his own comrades, while he was acquainted with many of the natives composing the force. One of the Malays who was wounded with the upas, but whose life was saved by brandy and his being kept in incessant motion, was well known to him (Mr. Grant). Mr. Grant concluded by stating that it was a remarkable fact that all the Borneo aboriginal Dyak tribes using the sumpitan are, more or less, tatooed; while those clans who are not thus ornamented seldom or never use the blow-pipe and poisoned arrow. Anthropologists may, perhaps, be able to explain this circumstance, and to discover whether it exists amongst the American Indians, in Africa, or in other countries where the blow-pipe is used; he (Mr. Grant) merely mentioned the fact.

Mr. Riddell read an extract from Humboldt, describing the manner in which the wourali poison, is made, and its effects.

Mr. MacGrigor Allan said he was not aware that natives so low in the scale of civilisation as the Hottentots and Australians used such virulent poisons, and he thought that the term "savages" could scarcely be applied to a people who were capable of making such ingenious weapons, and of concocting the deadly poisons which they applied to the points of their arrows. When it was found that so much ingenuity was displayed by such people, it threw a light on the origin of civilisation, which appeared to have been a gradual process. There was no absolute inferiority in the races of man if they were taken on their own ground, and the ingenuity exhibited by people usually reckoned as savages, showed that civilisation proceeded by degrees and was not originated in a supernatural way.

The Rev. Dunbar Heath observed, that though the poison used by savages was not abstractedly an Anthropological question, yet the consideration of the subject suggested by Mr. Allan rendered it so. The construction of the arrows, the methods adopted of poisoning the points, and of propelling them, showed great ingenuity in the races who produced such weapons. As to the nature and quality of the poisons, he did not think much consideration need be given in that Society. The manner in which the poisons acted on the blood was, no doubt, an interesting point viewed physiologically, but in an Anthropological point of view the question principally related to the ingenuity of the races by whom such weapons were constructed.

Dr. Beigel was glad that Mr. Grant had confirmed the opinion that the poisons used by savages were not so fatally poisonous as they had been described. Poisons manufactured without a knowledge of chemistry must differ very much in their effects. The practice mentioned of using the fangs of snakes in concocting poisons showed ignorance of the fact that the poison was only contained in the glands which secreted it, and not the fangs which merely pressed against the glands and extracted it: the fangs themselves being merely channels to convey the poison. Before travellers like Alexander Humboldt, Sir George Schomburgk, and others, had gained knowledge of the preparation of the poison, fabulous accounts have been given of the latter which still partly exist in the minds of those who have no means to enter into the scientific examination of such questions. The quantity of the ourara poison which is likely to be dissolved from the spear was not capable of killing a man or any large animal. He had himself administered ourara to hundreds of people, as it was recommended as a cure for epilepsy; the physiological action of it was most wonderful. It required about two grains to produce any poisonous effects on man; and after that quantity had been taken, for the first few minutes no change was observed. In ten minutes the eyes became dim and the power of sight was lost; and finally, the limbs become motionless, being paralysed, but the patient remained perfectly sensible. In twenty minutes the effects of the poison went off, and he was restored. That poison was dissolved with difficulty; it could not be dissolved in water, and if an arrow tipt with it were thrust into any muscle no quantity sufficient to poison could be absorbed by the blood. As long as the muscles of respiration are not paralysed by the poison, no

danger to life exists; and, therefore, if artificial respiration is performed, life can always be preserved, even if the action of the poison has been very intense. Thus, Mr. Waterton gave some to a donkey, which was paralysed, but continued breathing, and ultimately, after seven hours, recovered, though a large quantity was used. In his (Dr. Beigel's) opinion the savages could do very little injury with the ourara poison. Ourarine, an alkaloid prepared from that substance, was much more powerful, and therefore more adapted for accurate experiment on the action of the poison. The action not taking place till after about ten minutes of introducing a well-dissolved solution of the poison into the circulation, therefore it could be of no use in preventing the escape of animals wounded by arrows tipt with it. He was inclined to think, therefore, that when an animal was suddenly killed by the arrows the effect was not produced by the poison but by the arrow having struck some vital organ.

The Rev. J. G. Wood, in replying to the remarks on his communication, said that the upas poison lost its power very quickly, but such was not the case with the wourali poison. The arrows given to him by Mr. Waterton had been covered with that poison sixty years ago and still retained their full power, because they had been kept quite dry. Great many experiments had been made with that poison, and failures had often occurred because sufficient care had not been taken to use the best poison in a perfect condition. There was a great difference in the power of the poison, some of which was made for use and some for sale; and, in answer to a question from Dr. Beigel, he mentioned an instance of an Indian who had been wounded in the arm by one of his own poisoned arrows, and who died a few minutes afterwards.

The meeting then adjourned.

ANNUAL MEETING.

January 19th, 1869.

Dr. James Hunt, President, in the Chair.

The Minutes of the last Annual Meeting having been read and confirmed, the following statements of account, prepared by Messrs. Grey and Prideaux, of Lincoln's Inn Fields, and audited by Mr. J. Gould Avery and Mr. J. Epstein, were read by the Treasurer.